This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A method for determining a gesture comprising the steps of:

determining a change in a background of an image from a plurality of images;

determining an object in the image, said determining step further comprising the steps of:

obtaining a normalized color representation for a plurality of colors in each image;

determining from training images an estimate of a probability distribution of normalized color values for an object class; and

determining, for each pixel, a likelihood according to an estimated probability density of normalized color values for the object class;

determining a trajectory of the object through the plurality of images; and

classifying a gesture according to the trajectory of the object.

Claim 2 (Original): The method of claim 1, wherein the step of determining the change in the background further comprises the steps of:

determining a gradient intensity map for the background from a plurality of images;

determining a gradient intensity map for the current image;

determining, for a plurality of pixels, a difference between the gradient intensity map and the gradient intensity map for the background;

determining a comparison between the difference and a threshold; and

determining a pixel to be a background pixel according to the comparison.

Claim 3 (Original): The method of claim 1, wherein the object includes a user's hand.

Claim 4 (Cancelled).

Claim 5 (Original): The method of claim 1, wherein the step of determining the trajectory of the object through the plurality of images further comprises the steps of:

determining, for each pixel, a temporal likelihood across a plurality of images; and

determining a plurality of moments according to the temporal likelihoods.

Claim 6 (Currently Amended): The method of claim 1, wherein the step of determining the trajectory further comprises the steps of:

determining a difference in a size of the object over a pre-determined time period;

determining a plurality of angles between a plurality of lines connecting successive ~~controids~~ centroids over the time period; and

determining a feature vector according to the angles and lines.

Claim 7 (Original): The method of claim 6, further comprising the step of classifying the feature vector according to a time-delay neural network, wherein a feature is of a fixed length.

Claim 8 (Original): The method of claim 1, wherein the step of classifying the gesture further comprises the steps of:

determining a reference point;

determining a correspondence between the trajectory and the reference point; and

classifying the trajectory according to one of a plurality of commands.

Claim 9 (Currently Amended): A method for determining a trajectory of a hand through a plurality of images comprising the steps of:

detecting a reference point;

updating the reference point as the reference point is varied;

detecting a first translation of the hand through the plurality of images;

detecting a second translation through the plurality of images;

determining a gesture according to a vote; and

determining whether the gesture is a valid gesture command.

Claim 10 (Original): The method of claim 9, wherein the reference point is not interpreted as a gesture command.

Claim 11 (Original): The method of claim 9, wherein the reference point is characterized by hand size and a location of a centroid of the hand in each image.

Claim 12 (Original): The method of claim 9, wherein the first translation is one of a forward and a backward translation, wherein the first translation is characterized by a large change in hand size and a relatively small change in a centroid of the hand.

Claim 13 (Original): The method of claim 9, wherein the second translation is one of a left, a right, an up and a down translation.

Claim 14 (Original): The method of claim 9, wherein the step of detecting the second translation further comprises the step of determining a normalized vector

between two centroids c_t and c_{t-1} as a feature vector, wherein there are three output patterns.

Claim 15 (Original): The method of claim 14, wherein the three output patterns are a vertical movement, a horizontal movement, and an unknown, the method further comprising the steps of:

comparing the reference point to a centroid upon determining the translation to be a vertical or a horizontal translation; and

testing an input pattern upon determining the translation to be an unknown translation.

Claim 16 (Original): The method of claim 15, wherein the step of testing an input pattern further comprises the steps of detecting a circular movement, wherein an angle between vector c_tc_{t-1} and vector $c_{t-1}c_{t-2}$ is determined as the feature vector.

Claim 17 (Original): The method of claim 9, wherein the valid gesture is performed continually for a predetermined time.

Claim 18 (Currently Amended): A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for determining a gesture, the method steps comprising:

determining a change in a background of an image from a plurality of images;

determining an object in the image <u>said determining step further comprising the steps of:</u>

<u>obtaining a normalized color representation for a plurality of colors in each image;</u>

<u>determining from training images an estimate of a probability distribution of normalized color values for an object class; and</u>

<u>determining, for each pixel, a likelihood according to an estimated probability density of normalized color values for the object class;</u>

determining a trajectory of the object through the plurality of images; and

classifying a gesture according to the trajectory of the object.

Claim 19 (Original): The method of claim 18, wherein the step of determining the change in the background further comprises the steps of:

determining a gradient intensity map for the background from a plurality of images;

determining a gradient intensity map for the current image;

determining, for a plurality of pixels, a difference between the gradient intensity map and the gradient intensity map for the background;

determining a comparison between the difference and a threshold; and

determining a pixel to be a background pixel according to the comparison.

Claim 20 (Original): The method of claim 18, wherein the object includes a user's hand.

Claim 21 (Cancelled).

Claim 22 (Original): The method of claim 18, wherein the step of determining the trajectory of the object through the plurality of images further comprises the steps of:

determining, for each pixel, a temporal likelihood across a plurality of images; and

determining a plurality of moments according to the temporal likelihoods.

Claim 23 (Currently Amended): The method of claim 18, wherein the step of determining the trajectory further comprises the steps of:

determining a difference in a size of the object over a pre-determined time period;

determining a plurality of angles between a plurality of lines connecting successive ~~centroids~~ centroids over the time period; and

determining a feature vector according to the angles and lines.

Claim 24 (Original): The method of claim 23, further comprising the step of classifying the feature vector according to a time-delay neural network, wherein a feature is of a fixed length.

Claim 25 (Original): The method of claim 18, wherein the step of classifying the gesture further comprises the steps of:

determining a reference point;

determining a correspondence between the trajectory and the reference point; and

classifying the trajectory according to one of a plurality of commands.